

NOV 5 1965

KSC APOLLO PROGRAM DIRECTIVE NO. 1

TO: Distribution

FROM:

Rocco A. Petrone

Director, Plans, Programs
and Resources

SUBJECT: KSC Apollo Calibration Policy

REFERENCE: NPC 200-2

I. PURPOSE

It is KSC calibration policy to establish uniform calibration measurements of high accuracy that are traceable to national standards for all on-site operations performed by KSC and associated mission and support contractors.

The principal functions and responsibilities of KSC organizations and associated mission and support contractors for on-site calibration activities are outlined and shall be implemented commensurate with contract requirements and organizational needs.

Off-site contractor metrology and calibration activities related to KSC procured hardware are administered by the KSC Quality Assurance Division.

II. SCOPE

The KSC organizations involved in the implementation of this directive are:

Director, Plans, Programs and Resources (PPR)

Assistant Director for Support Operations (SOP)

Assistant Director for Launch Vehicle Operations (LVO)

Assistant Director for Spacecraft Operations (SCO)

Assistant Director for Information Systems (INS)

Director, Quality Assurance and Safety (QAS)

Contractor organizations presently involved in the implementation are:

Chrysler	North American	Bendix
Douglas	Grumman	RCA
IBM	AC Electronics	Federal Electric
Boeing	General Electric	TWA

III. AUTHORITIES AND RESPONSIBILITIES

A. The Director, Plans, Programs and Resources is responsible for:

1. Establishing KSC calibration policy in accordance with NASA reliability and quality assurance policy.
2. Validating and funding for overall KSC calibration facilities, resources and requirements.

B. The Assistant Director, Support Operations is responsible for:

1. Management of KSC instrument calibration activities which require traceability to national standards; calibrating and repairing instruments at KSC as designated by using organization requirements (see paragraph C.3).
2. Maintaining and operating KSC reference standards traceable to the National Bureau of Standards (NBS), including all measurement parameters requiring traceability. Serving as the KSC single technical interface with the National Bureau of Standards for equipment requiring NRS certification.
3. Certifying or calibrating all transfer and/or working standards in use to SOP or in use by other organizations as designated by the using organization calibration requirements (see paragraph C.3).
4. Calibrating portable, commercial test equipment, as designated by using organization requirements (see paragraph C.3).
5. As required by Launch Operations organizations, calibrating test equipments contained in stage or spacecraft GSE which are used as "system standards" for the maintenance, functional testing, adjustment, and calibration of the system or its components.
6. Establishing satellite laboratories in the Manned Spacecraft Operations Building, VAB, LC-39 pads, and other highly instrumented areas where large calibration and repair workloads make a local laboratory more economical or expeditious.

7. Providing KSC professional metrology support on measurement problems at state-of-the-art accuracy or stability levels, as designated by using organization requirements (see paragraph C.3).
 8. Maintaining an inventory and calibration status file.
 9. Establishing and administering a recall system for providing advance notification to all KSC mission and support contractor organizations of equipment recalibration due dates; notifying KSC operational organizations when instruments are not returned for recalibration.
 10. Providing a loan pool for the receipt, storage and short-term issue of high usage general test equipment, and other measuring and calibration devices as required by KSC and associated contractors.
 11. Establishing procedures used for control of maintenance, adjustment, and repair of all reference standards; and for establishing similar procedures for those standards periodically calibrated by SOP which are requested by other KSC organizations and their contractors.
 12. On an emergency basis, calibrating operational type equipment (such as flight hardware and components, transducers, etc.) as requested.
 13. Developing consolidated KSC annual calibration resources requirements.
- C. Assistant Directors for Support Operations, Launch Vehicle Operations, Spacecraft Operations, and Information Systems are responsible in their respective organizations for:
1. Identifying a specific organizational segment to implement the calibration program.
 2. Managing and administering the respective mission and support contractor calibration activities.
 3. Obtaining, reviewing, validating, and consolidating annual calibration resources requirements from their respective contractors.
 4. Monitoring mission and support contractor compliance with NASA and KSC calibration policy.
 5. Preparing (or assuring) forecasts of equipment requiring calibration by SOP

6. Assuring SOP is notified of all surplus or obsolete equipment which no longer requires calibration.
 7. Performing (or assuring their contractors perform) systems calibration.
- D. The contractors listed in paragraph 11 above are responsible for:
1. Identifying a specific organizational segment (or aligning with the cognizant NASA operational organization) to implement calibration activities.
 2. Calibrating operational type equipment such as flight hardware, overall systems checkout equipment and transducers; functional checkout and calibration of flight and GSE pressure switches, relief valves, tape or oscillographic recorders, discriminators, and similar equipment which are not systems standards requiring SOP calibration in accordance with paragraph B.5 above.
 3. Forecasting and submitting annual calibration requirements to the cognizant NASA operational organization.
 4. Developing and implementing procedures to assure removal from use (or flagging as suspect) all equipment which is overdue for recalibration, including marking of any data collected from use of such equipment.
 5. Establishing and implementing procedures for the control of equipment (inspection, cleaning and test equipment) which is not periodically calibrated by SOP, to comply with NPC 200-3, paragraph 3.9, "Control of inspection, Measuring and Test Equipment", NPC 200-2, section 9.0, "Inspection, Measuring and Test Equipment", or equivalent requirements.
 6. Establishing and maintaining a list of contractor supplied equipment, and quantity of each type, requiring certification or calibration by SOP. The contractor shall indicate the time frame for mandatory recalibration of the equipment listed. This list shall be submitted to the cognizant NASA operational organization.
 7. Submitting programs and procedures for calibration, maintenance adjustment, repair and mandatory recalibration control of operational equipment to the cognizant NASA operational organization.
 8. Preparing a forecast and subsequent quarterly revisions of equipment requiring calibration and submitting it to the cognizant NASA operational organization for transmittal to SOP or

submitting it directly to SOP when so directed by the cognizant NASA operational organization.

9. Notifying the cognizant NASA operational organization or SOP when so designated by the cognizant NASA operational organization of all surplus or obsolete equipment which no longer requires calibration.
- E. The Director, Quality Assurance and Safety is responsible for monitoring the implementation of this policy and advising the Director, Plans, Programs and Resources of deviations from the policy that cannot readily be resolved with the responsible organizations.

Distribution:

Mr. Clark, SOP
Dr. Gruene, LVO
Mr. Sandler, INS
Mr. J. Williams, SCO
Mr. McDaris, QAS

cc:

Mr. McCoy, PPR-1
Mr. Greenglass, PPR-3
Mr. Mathews, PPR-4
Mr. Clearman, PPR-5
Mr. Body, PPR-6
Mr. Bertram, PPR-7
Mr. Poppel, EDV-1
Mr. Bagnulo, EDV-2

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UNITED STATES GOVERNMENT

Memorandum

TO : See distribution

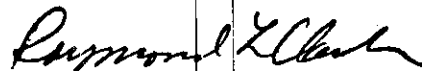
DATE: February 7, 1966

FROM : Assistant Director for Support Operations, SOP

SUBJECT: KSC Calibration Policy

Reference: KSC Apollo Program Directive No. 1, dated November 5, 1965, subject: KSC Apollo Calibration Policy

1. I consider the referenced directive to apply to all programs and activities at KSC as far as the responsibilities of SOP are concerned.
2. As evidenced in recent management reviews, there seems to be some misunderstanding regarding the responsibilities and functions of the Calibration Branch; more specifically, the purpose of the Recall System which is operated by the Branch.
3. The Director, KSC, has made it very clear that the using organization is responsible for insuring that properly calibrated instruments are used in all KSC operations and activities, and conversely, that instruments are sent in for calibration only when needed. The Calibration Branch only provides calibration services. The Recall System is one of the services provided to the using organizations. This system, simply stated, is a method of reminding the users of instruments that the normal recalibration interval, as established by the users as good engineering practice, has expired. If the users feel that the recalibration interval should be changed for these instruments, the Calibration Branch should be notified to make such a change in the recall printouts. Also, if an instrument is temporarily not being used, there obviously is no need to have it recalibrated (see memo from Director, QAS, dated January 19, 1966).
4. The workload in the Calibration Branch has been increasing at a very rapid rate, to the extent that it has surpassed our planned capability. It is, therefore, requested that you and the contractors over which you have cognizance, review your calibration requirements and reduce them to an absolute minimum. It is further requested that the Calibration Branch be notified of any changes in your anticipated workload.



Raymond L. Clark

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